

Amendments to the Claims:

5 The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 10 1. (withdrawn) A circuit board assembly which comprises:
an electrically insulating layer;
a conductive printed wiring layer formed on the surface of said electrically insulating layer and including a plurality of conductive paths;
15 a conductive trace on said electrically insulating layer and means for dissipating a transient;
a surface mount resistor fixed in relation to said trace.
20 2. (withdrawn) The circuit board assembly as described in claim 1 wherein said surface mount resistor has opposed generally planar lips.
3. (withdrawn) The circuit board assembly as described in claim 1 wherein said
25 surface mount resistor has a generally planar lips and said trace is also generally planar.
4. (withdrawn) The circuit board assembly as described in claim 1 wherein said surface mount resistor has a generally planar lower lip, said trace is also
30 generally planar and said lower lip and said trace are generally parallel.

5. (withdrawn) The circuit board assembly as described in claim 2 wherein said generally planar lips of said surface mount resistor are closer to said trace than the thickness of said surface mount resistor.
- 5 6. (withdrawn) The circuit board assembly as described in claim 2 wherein said lips and said trace are parallel.
7. (withdrawn) The circuit board assembly as described in claim 4 wherein a single geometric plane extends through substantially all of said lips and all of said
10 trace.
8. (withdrawn) A circuit board assembly as described in claim 7 wherein the lower surface of said lips and the lower surface of said trace are substantially coplanar.
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9. (withdrawn) A circuit board assembly as described in claim 7 wherein the upper surface of said lower lip and the upper surface of said trace are substantially coplanar.
- 20 10. (withdrawn) A circuit board assembly as described in claim 7 wherein the lower surface of said lower lip and the lower surface of said trace are substantially coplanar and in addition the upper surface of said lip and the upper surface of said trace are substantially coplanar.
- 25 11. (withdrawn) A circuit board assembly as described in claim 10 wherein said surface mount resistor has a height of t and the spacing between said lip and said trace is less than t .
12. (withdrawn) A circuit board assembly as described in claim 11 wherein the
30 spacing between said lip and said trace is no more than one half t .

Claims 13-26 (cancelled)

27. (withdrawn) A circuit board assembly which comprises:

5 an electrically insulating layer;

a conductive printed wiring layer formed on the surface of said electrically insulating layer and including a plurality of conductive paths;

10 a conductive trace on said electrically insulating layer and means for dissipating a transient;

a first surface mount resistor fixed in closely spaced relation to said trace;

15 a second surface mount resistor fixed in closely spaced relation to said trace.

28. (withdrawn) The circuit board assembly as described in claim 27 wherein each of said surface mount resistors has opposed generally planar lips.

20 29. (withdrawn) The circuit board assembly as described in claim 27 wherein each of said surface mount resistors has a generally planar lips and said trace is also generally planar.

25 30. (withdrawn) The circuit board assembly as described in claim 27 wherein each of said surface mount resistors has a generally planar lower lip, said trace is also generally planar and all of said lower lips and said trace are generally parallel.

30 31. (withdrawn) The circuit board assembly as described in claim 27 wherein said generally planar lips of said surface mount resistors are closer to said trace than the thickness of said surface mount resistors.

32. (withdrawn) The circuit board assembly as described in claim 28 wherein said lips and said trace are parallel.
- 5 33. (withdrawn) The circuit board assembly as described in claim 32 wherein a single geometric plane extends through substantially all of said lips and all of said trace.
34. (withdrawn) A circuit board assembly as described in claim 33 wherein the
10 lower surface of said lips and the lower surface of said trace are substantially coplanar.
35. (withdrawn) A circuit board assembly as described in claim 33 wherein the
15 upper surface of said lower lips and the upper surface of said trace are substantially coplanar.
36. (withdrawn) A circuit board assembly as described in claim 33 wherein the lower surface of said lower lips and the lower surface of said trace are substantially coplanar and in addition the upper surface of said lips and the upper
20 surface of said trace are substantially coplanar.
37. (withdrawn) A circuit board assembly as described in claim 33 wherein said surface mount resistor has a height of t and the spacing between each of said lips and said trace is less than t .
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38. (withdrawn) A circuit board assembly as described in claim 37 wherein the spacing between each of said lips and said trace is no more than one half t .
39. (withdrawn) A circuit board assembly as described in claim 27 wherein the
30 distance between said first and second resistors is greater than the height of each resistor.

40. (withdrawn) A circuit board assembly as described in claim 28 wherein the distance between said first and second resistors is greater than the height of each resistor.

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41. (withdrawn) A circuit board assembly as described in claim 29 wherein the distance between said first and second resistors is greater than the height of each resistor.

10 42. (withdrawn) A circuit board assembly as described in claim 30 wherein the distance between said first and second resistors is greater than the height of each resistor.

15 43. (withdrawn) A circuit board assembly as described in claim 31 wherein the distance between said first and second resistors is greater than the height of each resistor.

20 44. (withdrawn) A circuit board assembly as described in claim 32 wherein the distance between said first and second resistors is greater than the height of each resistor.

25 45. (withdrawn) A circuit board assembly as described in claim 33 wherein the distance between said first and second resistors is greater than the height of each resistor.

46. (withdrawn) A circuit board assembly as described in claim 34 wherein the distance between said first and second resistors is greater than the height of each resistor.

47. (withdrawn) A circuit board assembly as described in claim 35 wherein the distance between said first and second resistors is greater than the height of each resistor.
- 5 48. (withdrawn) A circuit board assembly as described in claim 36 wherein the distance between said first and second resistors is greater than the height of each resistor.
- 10 49. (withdrawn) A circuit board assembly as described in claim 38 wherein the distance between said first and second resistors is greater than the height of each resistor.
- 15 50. (withdrawn) A circuit board assembly as described in claim 27 wherein the distance between said first and second resistors is at least three times the height of each resistor.
- 20 51. (withdrawn) A circuit board assembly as described in claim 21 wherein the distance between said first and second resistors is at least three times the height of each resistor.
- 25 52. (withdrawn) A circuit board assembly as described in claim 29 wherein the distance between said first and second resistors is at least three times the height of each resistor.
- 30 53. (withdrawn) A circuit board assembly as described in claim 30 wherein the distance between said first and second resistors is at least three times the height of each resistor.
54. (withdrawn) A circuit board assembly as described in claim 32 one wherein the distance between said first and second resistors is at least three times the height of each resistor.

55. (withdrawn) A circuit board assembly as described in claim 32 wherein the distance between said first and second resistors is at least three times the height of each resistor.

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56. (withdrawn) A circuit board assembly as described in claim 33 wherein the distance between said first and second resistors is at least three times the height of each resistor.

10 57. (withdrawn) A circuit board assembly as described in claim 34 wherein the distance between said first and second resistors is at least three times the height of each resistor.

15 58. (withdrawn) A circuit board assembly as described in claim 35 wherein the distance between said first and second resistors is at least three times the height of each resistor.

20 60. (withdrawn) A circuit board assembly as described in claim 37 wherein the distance between said first and second resistors is at least three times the height of each resistor.

25 60. (withdrawn) A circuit board assembly as described in claim 38 wherein the distance between said first and second resistors is at least three times the height of each resistor.

30 61. (withdrawn) A circuit board assembly as described in claim 39 wherein the distance between said first and second resistors is at least three times the height of each resistor.

62. (new) A circuit protection system for dissipating transients without the use of transorbs or metal oxide varistors which comprises:

a printed circuit board;

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a surface mount component mounted on said printed circuit board, said surface component having first and second end caps, said first and second end caps each having a first edge;

10 a conductive trace on said printed circuit board having first and second opposed edges extending intermediate said first and second end caps, said first and second opposed edges being coplanar and thereby defining a plane, said plane intersecting said first edge of said first end cap and intersecting said first edge of said second end cap, said first edge of said trace being disposed in parallel
15 spaced relation to said first edge of said first end cap and said second edge of said trace being disposed in parallel spaced relation to said first edge of said second end cap.

63. (new) The circuit protection system as described in claim 62 wherein
20 dimension of the space intermediate (1) said first edge of said trace and said first edge of said first end cap and (2) said second edge of said trace and said first edge of said second end cap are both substantially equal to X.

64. (new) The circuit protection system as described in claim 63 wherein said
25 surface mount component has a height dimension t and X is less than t.

65. (new) The circuit protection system as described in claim 63 wherein X is approximately .01 inch.

30 66. (new) A circuit protection system for dissipating transients without the use of transorbs or metal oxide varistors which comprises:

a printed circuit board;

5 a first surface mount component mounted on said printed circuit board, said surface component having first and second end caps, said first and second end caps each having a first edge;

10 a second surface mount component mounted on said printed circuit board, said surface component having first and second end caps, said first and second end caps each having a first edge;

15 a conductive trace on said printed circuit board having first and second opposed edges extending intermediate said first and second end caps of said first surface mounted component, said first and second opposed edges being coplanar and thereby defining a plane, said plane intersecting said first edge of said first end cap of said first surface mounted component and intersecting said first edge of said second end cap of said first surface mounted component, said first edge of said trace being disposed in parallel spaced relation to said first edge of said first end cap of said first surface mounted component and said second edge of said trace is disposed in parallel spaced relation to said first edge of said second end cap of said first surface mounted component; and

25 said conductive trace on said printed circuit board having said first and second opposed edges extending intermediate said first and second end caps of said second surface mounted component, said plane intersecting said first edge of said first end cap of said second surface mounted component and intersecting said first edge of said second end cap of said second surface mounted component, said first edge of said trace being disposed in parallel spaced relation to said first edge of said first end cap of said second surface mounted component and said second edge of said trace being disposed in parallel spaced

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relation to said first edge of said second end cap of said second surface mounted component.

67. (new) The circuit protection system as described in claim 66 wherein
5 dimension of the space intermediate (1) said first edge of said trace and said first edge of said first end cap of said first surface mounted component and (2) said second edge of said trace and said first edge of said second end cap of said first surface mounted component, (3) said first edge of said trace and said first edge of said first end cap of said second surface mounted component and (4)
10 said second edge of said trace and said first edge of said second end cap of said second surface mounted component are all substantially equal to X.

68. (new) The circuit protection system as described in claim 65 wherein said surface mount component has a height dimension t and X is less than t.
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20 69. (new) The circuit protection system as described in claim 67 wherein X is approximately .01 inch.

70. (new) The circuit protection system as described in claim 67 wherein the minimum spacing between the respective end caps of said first and second
25 surface mounted components is at least three times the dimension X.

71. (new) A circuit protection system for dissipating transients without the use of transorbs or metal oxide varistors which comprises:
30 a printed circuit board;

a first surface mount component mounted on said printed circuit board, said surface component having first and second end caps, said first and second end caps each having a first edge;

- 5 a second surface mount component mounted on said printed circuit board, said surface component having first and second end caps, said first and second end caps each having a first edge;

- 10 a first conductive trace on said printed circuit board having first and second opposed edges extending intermediate said first and second end caps of said first surface mounted component, said first and second opposed edges being coplanar and thereby defining a plane, said plane intersecting said first edge of said first end cap of said first surface mounted component and intersecting said first edge of said second end cap of said first surface mounted component, said
15 first edge of said first trace being disposed in parallel spaced relation to said first edge of said first end cap of said first surface mounted component and said second edge of said first trace being disposed in parallel spaced relation to said first edge of said second end cap of said first surface mounted component;

- 20 said first conductive trace on said printed circuit board having said first and second opposed edges extending intermediate said first and second end caps of said second surface mounted component, said plane intersecting said first edge of said first end cap of said second surface mounted component and intersecting said first edge of said second end cap of said second surface mounted
25 component, said first edge of said first trace being disposed in parallel spaced relation to said first edge of said first end cap of said second surface mounted component and said second edge of said first trace being disposed in parallel spaced relation to said first edge of said second end cap of said second surface mounted component;

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a third surface mount component mounted on said printed circuit board, said third surface component having first and second end caps, said first and second end caps each having a first edge;

- 5 a second conductive trace on said printed circuit board having first and second opposed edges extending intermediate said first and second end caps of said third surface mount component, said first and second opposed edges of said second conductive trace being coplanar and thereby defining a plane, said plane intersecting said first edge of said first end cap of said third surface mount component and intersecting said first edge of said second end cap of said third surface mount component, said first edge of said second trace being disposed in parallel spaced relation to said first edge of said first end cap of said third surface mount component and said second edge of said second trace being disposed in parallel spaced relation to said first edge of said second end cap of said third surface mount component.
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72. (new) The circuit protection system as described in claim 71 wherein dimension of the space intermediate (1) said first edge of said first trace and said first edge of said first end cap of said first surface mounted component, (2) said second edge of said first trace and said first edge of said second end cap of said first surface mounted component, (3) said first edge of said first trace and said first edge of said first end cap of said second surface mounted component and (4) said second edge of said first trace and said first edge of said second end cap of said second surface mounted component are all equal to X, (5) said first edge of said second trace and said first edge of said first end cap of said third surface mounted component, and (6) said second edge of said second trace and said first edge of said second end cap of said third surface mounted component are all substantially equal to X.
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- 30 73. (new) The circuit protection system as described in claim 72 wherein each surface mount component has a height dimension t and X is less than t.

74. (new) The circuit protection system as described in claim 72 wherein X is approximately .01 inch.

5 75. (new) The circuit protection system as described in claim 71 wherein the minimum spacing between the respective end caps of said first and second surface mounted components is at least three times the dimension X.

76. (new) A circuit protection system for dissipating transients without the use of
10 transorbs or metal oxide varistors which comprises:

a printed circuit board;

a surface mount resistor mounted on said printed circuit board, said surface
15 resistor having first and second end caps, said first and second end caps each having a first edge;

a conductive trace on said printed circuit board having first and second opposed
edges extending intermediate said first and second end caps, said first and
20 second opposed edges being coplanar and thereby defining a plane, said plane intersecting said first edge of said first end cap and intersecting said first edge of said second end cap, said first edge of said trace being disposed in parallel spaced relation to said first edge of said first end cap and said second edge of said trace being disposed in parallel spaced relation to said first edge of said
25 second end cap.

77. (new) The circuit protection system as described in claim 76 wherein
dimension of the space intermediate (1) said first edge of said trace and said
first edge of said first end cap and (2) said second edge of said trace and said
30 first edge of said second end cap are both substantially equal to X.

78. (new) The circuit protection system as described in claim 77 wherein said surface mount resistor has a height dimension t and X is less than t .

79. (new) The circuit protection system as described in claim 78 wherein X is
5 approximately .01 inch.

80. (new) A circuit protection system for dissipating transients without the use of transorbs or metal oxide varistors which comprises:

10 a printed circuit board;

a first surface mount resistor mounted on said printed circuit board, said surface resistor having first and second end caps, said first and second end caps each having a first edge;

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a second surface mount resistor mounted on said printed circuit board, said surface resistor having first and second end caps, said first and second end caps each having a first edge;

20 a conductive trace on said printed circuit board having first and second opposed edges extending intermediate said first and second end caps of said first surface mounted resistor, said first and second opposed edges being coplanar and thereby defining a plane, said plane intersecting said first edge of said first end cap of said first surface mounted resistor and intersecting said first edge of said
25 second end cap of said first surface mounted resistor, said first edge of said trace being disposed in parallel spaced relation to said first edge of said first end cap of said first surface mounted resistor and said second edge of said trace is disposed in parallel spaced relation to said first edge of said second end cap of said first surface mounted resistor; and

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said conductive trace on said printed circuit board having said first and second opposed edges extending intermediate said first and second end caps of said second surface mounted resistor, said plane intersecting said first edge of said first end cap of said second surface mounted resistor and intersecting said first edge of said second end cap of said second surface mounted resistor, said first edge of said trace being disposed in parallel spaced relation to said first edge of said first end cap of said second surface mounted resistor and said second edge of said trace being disposed in parallel spaced relation to said first edge of said second end cap of said second surface mounted resistor.

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81. (new) The circuit protection system as described in claim 80 wherein dimension of the space intermediate (1) said first edge of said trace and said first edge of said first end cap of said first surface mounted resistor and (2) said second edge of said trace and said first edge of said second end cap of said first surface mounted resistor, (3) said first edge of said trace and said first edge of said first end cap of said second surface mounted resistor and (4) said second edge of said trace and said first edge of said second end cap of said second surface mounted resistor are all substantially equal to X.

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82. (new) The circuit protection system as described in claim 81 wherein said surface mount resistor has a height dimension t and X is less than t.

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83. (new) The circuit protection system as described in claim 82 wherein X is approximately .01 inch.

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84. (new) The circuit protection system as described in claim 81 wherein the minimum spacing between the respective end caps of said first and second surface mounted resistors is at least three times the dimension X.

85. (new) A circuit protection system for dissipating transients without the use of transorbs or metal oxide varistors which comprises:

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a printed circuit board;

5 a first surface mount resistor mounted on said printed circuit board, said surface resistor having first and second end caps, said first and second end caps each having a first edge;

10 a second surface mount resistor mounted on said printed circuit board, said surface resistor having first and second end caps, said first and second end caps each having a first edge;

15 a first conductive trace on said printed circuit board having first and second opposed edges extending intermediate said first and second end caps of said first surface mounted resistor, said first and second opposed edges being coplanar and thereby defining a plane, said plane intersecting said first edge of said first end cap of said first surface mounted resistor and intersecting said first edge of said second end cap of said first surface mounted resistor, said first edge of said first trace being disposed in parallel spaced relation to said first edge of said first end cap of said first surface mounted resistor and said second edge of said first trace being disposed in parallel spaced relation to said first edge of said second end cap of said first surface mounted resistor;

25 said first conductive trace on said printed circuit board having said first and second opposed edges extending intermediate said first and second end caps of said second surface mounted resistor, said plane intersecting said first edge of said first end cap of said second surface mounted resistor and intersecting said first edge of said second end cap of said second surface mounted resistor, said first edge of said first trace being disposed in parallel spaced relation to said first edge of said first end cap of said second surface mounted resistor and said second edge of said first trace being disposed in parallel spaced relation to said first edge of said second end cap of said second surface mounted resistor;

a third surface mount resistor mounted on said printed circuit board, said third surface resistor having first and second end caps, said first and second end caps each having a first edge;

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a second conductive trace on said printed circuit board having first and second opposed edges extending intermediate said first and second end caps of said third surface mount resistor, said first and second opposed edges of said second conductive trace being coplanar and thereby defining a plane, said plane
10 intersecting said first edge of said first end cap of said third surface mount resistor and intersecting said first edge of said second end cap of said third surface mount resistor, said first edge of said second trace being disposed in parallel spaced relation to said first edge of said first end cap of said third surface mount resistor and said second edge of said second trace being disposed in
15 parallel spaced relation to said first edge of said second end cap of said third surface mount resistor.

86. (new) The circuit protection system as described in claim 85 wherein dimension of the space intermediate (1) said first edge of said first trace and
20 said first edge of said first end cap of said first surface mounted resistor, (2) said second edge of said first trace and said first edge of said second end cap of said first surface mounted resistor, (3) said first edge of said first trace and said first edge of said first end cap of said second surface mounted resistor and (4) said second edge of said first trace and said first edge of said second end cap of said
25 second surface mounted resistor are all equal to X, (5) said first edge of said second trace and said first edge of said first end cap of said third surface mounted resistor, and (6) said second edge of said second trace and said first edge of said second end cap of said third surface mounted resistor are all substantially equal to X.

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87. (new) The circuit protection system as described in claim 86 wherein each surface mount resistor has a height dimension t and X is less than t .

88. (new) The circuit protection system as described in claim 86 wherein X is
5 approximately .01 inch.

89. (new) The circuit protection system as described in claim 71 wherein the minimum spacing between the respective end caps of said first and second surface mounted resistors is at least three times the dimension X .

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